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CORRESPONDENCE

Aortobronchial fistula: Secondary to patent ductus arteriosus

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A 16-year-old female patient, undergoing open surgical ligation for congenital patent ductus arteriosus 13 years ago, was sent to one hospital with sudden intermittent hemoptysis—30 ml of fresh blood at a time once every 2—3 days for 2 months. She was evaluated with chest computed tomography and bronchoscopy, but was misdiagnosed as having pneumonia and tuberculosis, and was subsequently scheduled for treatment of anti-inflammatory and anti-tuberculosis diseases, and hemostasis for 21 days. Before admission to our emergency department, she presented with a massive hemoptysis of about 200 ml fresh blood. The emergency chest computed tomography revealed a clump shadow with peripheral enhancement in the left upper lobe. Emergency nonselective interventional angiography via the femoral vein and femoral artery displayed the normality of pulmonary artery and aortic artery. In succession, the cobra catheter was replaced, and the aortic wall was hooked at the height of the left hilum. The contrast agent was apparently leaking into the left upper lobe, and an aortobronchial fistula tube was visible (Fig. 1A). With the contrast agent being continuously injected, the left bronchus and secondary branches were developing (Fig. 1B). Later, the contrast agent was discharged by the patient while coughing. Therefore, an aortobronchial fistula was identified. She then underwent an emergent thoracotomy, which revealed close adhesion of the upper lobe to aortic isthmus. The width and length of the adhesions was about 2 and 1.5 cm, respectively. After the dissection of peripheral adhesions, a 2-diameters-width pipe connecting the aortic isthmus and the tip section was placed. Then, a fistulectomy and resection of the left upper lobe were performed successively. Aortic fistula was repaired with a 4—0 prolene suture. The patient was discharged and had an uneventful recovery.

Aortobronchial fistula is a rare and definite cause of intermittent and mass hemoptysis. Primary aortobronchial fistula is very rare,[1] and majority of documented cases in the literature are characterized as secondary. The lesions (aortic aneurysm or pseudoaneurysm, surgical sutures, aortic stent grafting, severe lung infection, and patent ductus arteriosus) in the aortic artery are irritated or oppressed continuously, which may lead to inflammation and scar conformation. Eventually, a fistula tube would communicate between the aorta and the adjacent lobe. The presumed pathogenesis of this case is related to suture infection of the aorta that gradually erodes and damages the wall of the aorta and the adjacent lobe, which results in the formation of infected aortic pseudoaneurysm and scarring. When pseudoaneurysms rupture, blood communication between the lobe or bronchial and aorta is available.

Concerning the diagnosis management, angiography is the most effective method to determine the presence of a fistula. With regard to the surgical procedure, simple patch repair[2] and arterial replacement are practical procedures. Intervention block and vascular stenting[3,4] are suitable candidates for the small fistula. Big fistula and severe pulmonary consolidation are indications for thoracotomy.

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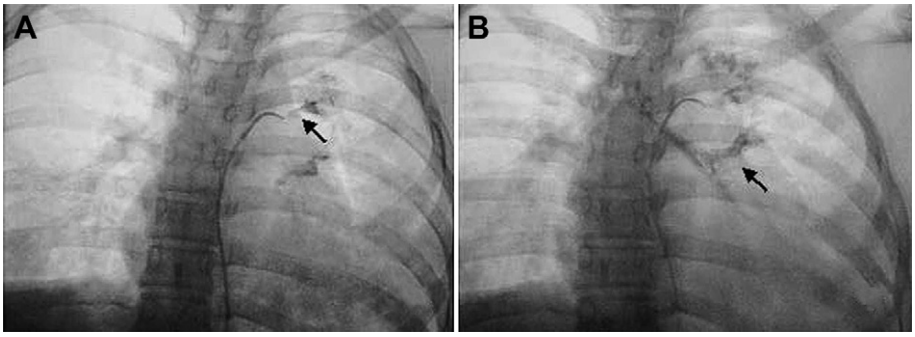

Figure 1 (A) Emergency aortic angiography was performed. In the descending aorta, the contrast agent was apparently leaking into the left upper lobe through a fistula tube at the height of the left hilum (black arrow). (B) In the wake of a continuously injected agent, the left bronchus and bronchial tree were developing gradually (black arrow). Aortobronchial fistula was diagnosed.

In conclusion, particular attention should be focused on patients with intermittent massive hemoptysis due to uncommon causes. Emergency artery angiography and early surgical involvement are critical processes for diagnosis and good prognosis.

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